

TWO NEW FLIGHTLESS SPECIES OF *SCARITES* S. STR.  
INHABITING FLORIDA AND THE WEST INDIES  
(COLEOPTERA: CARABIDAE: SCARITINI)

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*Abstract.*—Two new flightless species of *Scarites* s. str., near *Scarites subterraneus* Fabricius, are described. *Scarites ocalensis* n. sp. is micropterous and is recorded from peninsular Florida north of Lake Okeechobee. *Scarites marinus* n. sp. is brachypterous and inhabits marine beaches of peninsular Florida, the Bahama Islands, Cuba, and the Yucatan Peninsula. A key and diagnoses are provided to aid in identification.

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Incredible as it may seem, given the large number of described forms within the North American *Scarites subterraneus* complex, study of LeConte's type material at the Museum of Comparative Zoology (Harvard University) and Chaudoir's type material at the Muséum National d'Histoire Naturelle (Paris) has revealed two unrecognized species inhabiting Florida and the West Indies. Both species are flightless; *Scarites marinus* n. sp. is intertidal.

The *Scarites subterraneus* complex is defined here to include members of the genus *Scarites* possessing the following combination of characters: characteristics of *Scarites* s. str. (Bänninger, 1938: 114-116; Reichardt, 1977: 388); antennomeres 8-10 as broad as long (moniliform); anterior lateral seta of pronotum absent; metasternum asetose; in the New World restricted to North America. A neotype was designated for *Scarites subterraneus* Fabricius by Nichols (1985), thereby stabilizing the taxonomic identity of this species. This action also preserves the concept of the genus *Scarites* because *S. subterraneus* is the type species.

As defined above, the *Scarites subterraneus* complex excludes several other nearctic species of *Scarites* in the narrow sense. These species (including *Scarites quadriceps* Chaudoir, *Scarites substriatus* Haldeman, etc.) differ from members of the *Scarites subterraneus* complex in having antennomeres 8-10 distinctly longer than broad (filiform). Additional study is needed to work out the species limits among these species. A provisional key to the New World species of the *Scarites subterraneus* complex is provided after the descriptions of *S. ocalensis* n. sp. and *S. marinus* n. sp.

#### METHODS

Male and female genitalic characters have not been used to distinguish species of *Scarites* (see Bänninger, 1938). Based upon my own observations this is because the genitalia generally do not differ significantly among the species. The two species described here were delimited using consistently correlated, non-genitalic mor-

phological differences and apparent differences in ecology. Wing venation homologies and abbreviations in Figs. 6–8 were adapted from Wallace and Fox (1975).

*Scarites marinus* Nichols, NEW SPECIES

Figs. 1, 7, 9

*Scarites californicus*, Schwarz, 1878: 435; Blatchley, 1914: 62, 1917: 137; Darlington, 1936: 160 (nec LeConte). **MISIDENTIFICATION.**

*Scarites subterraneus* var. *californicus*, Schaeffer, 1913: 123 (in part); Leng, 1915: 567, 568 (nec LeConte). **MISIDENTIFICATION.**

*Scarites* sp. ?, Leng and Mutchler, 1914: 395; Bänninger, 1938: 139 (footnote); Darlington, 1953: 4.

**Diagnosis.**—Characteristics of *Scarites* s. str. (Bänninger, 1938: 114–116; Reichardt, 1977: 388); antennomeres 8–10 as broad as long (moniliform); postocular area not projecting laterally as far as compound eye, in dorsal view; anterior lateral seta of pronotum absent; metasternum asetose; metasternum behind mesocoxa longer than length of metacoxa; elytral striae very finely impressed, evanescent toward apex and possessing minute punctulae; setiferous puncture in basal half of interval 3 of elytron absent; brachypterous; small species, left elytron 5.85–9.05 mm in length; inhabiting marine beaches.

**Description.**—Characteristics of *Scarites* s. str. (Bänninger, 1938: 114–116; Reichardt, 1977: 388); habitus (Fig. 1); body black, antennae and palpi ferrugineous, legs piceous.

**Head:** Antennae with antennomeres 8–10 as broad as long (moniliform); compound eyes as in *S. subterraneus* (Fig. 4), postocular area not projecting laterally as far as compound eye (in dorsal view) and lacking a narrow ocular margin.

**Thorax:** Pronotum broadest about middle and lacking anterior lateral seta; metasternum asetose, behind mesocoxa slightly longer than metacoxa; metepisternum with anterior margin ca.  $\frac{1}{2}$  length of lateral margin; elytral striae very finely impressed, evanescent toward apex and possessing minute punctulae; elytral intervals lacking microsculpture on disc, with isodiametric (hexagonal) microsculpture at sides and at extreme apex (at 75 $\times$ ); setiferous puncture in basal half of interval 3 almost always absent; brachypterous (Fig. 7); elytra together elongate oval, dorsal outline as in *S. subterraneus*.

**Abdomen:** No obvious differences in male or female genitalia from *S. subterraneus*.

**Size:** Length of left elytron: range (170 individuals), 5.85–9.05 mm (nearest .05); median, 8.15 mm (nearest .05); mean, 8.00 (nearest .05).

**Measurements of female holotype:** Maximum width of head before eyes, 3.28 mm (nearest .02 mm); maximum width of head, 3.80 mm (nearest .02); maximum width of pronotum, 4.55 mm (nearest .05); width of pronotum at hind angles, 4.05 mm (nearest .05); length of pronotum at midline, 3.20 mm (nearest .05); maximum width of elytra, 4.85 mm (nearest .05); length of left elytron, 8.15 mm (nearest .05).

**Etymology.**—Named for the habitat that this species occupies, namely marine beaches.

**Type locality.**—Big Pine Key, Florida (Monroe Co.).

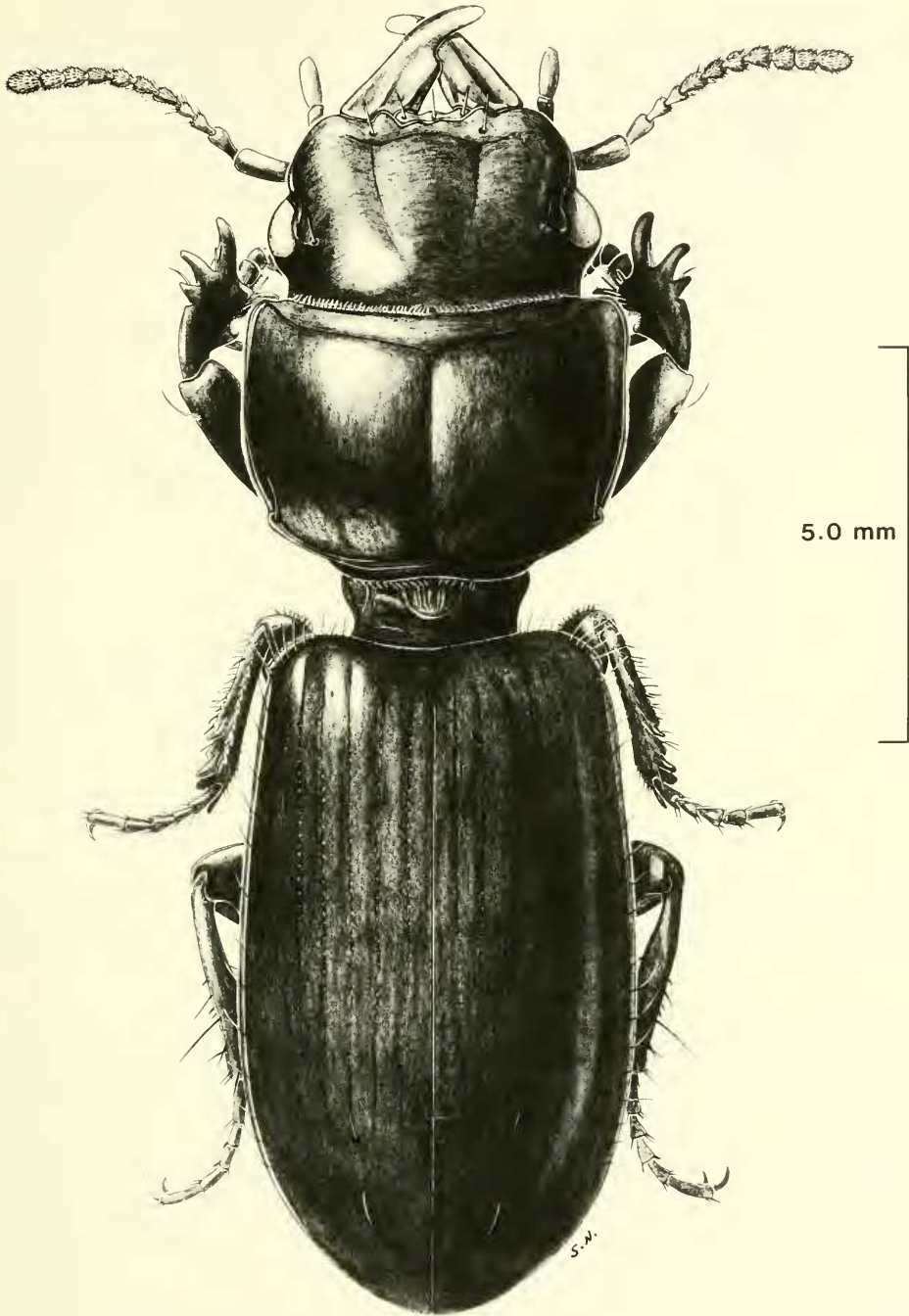
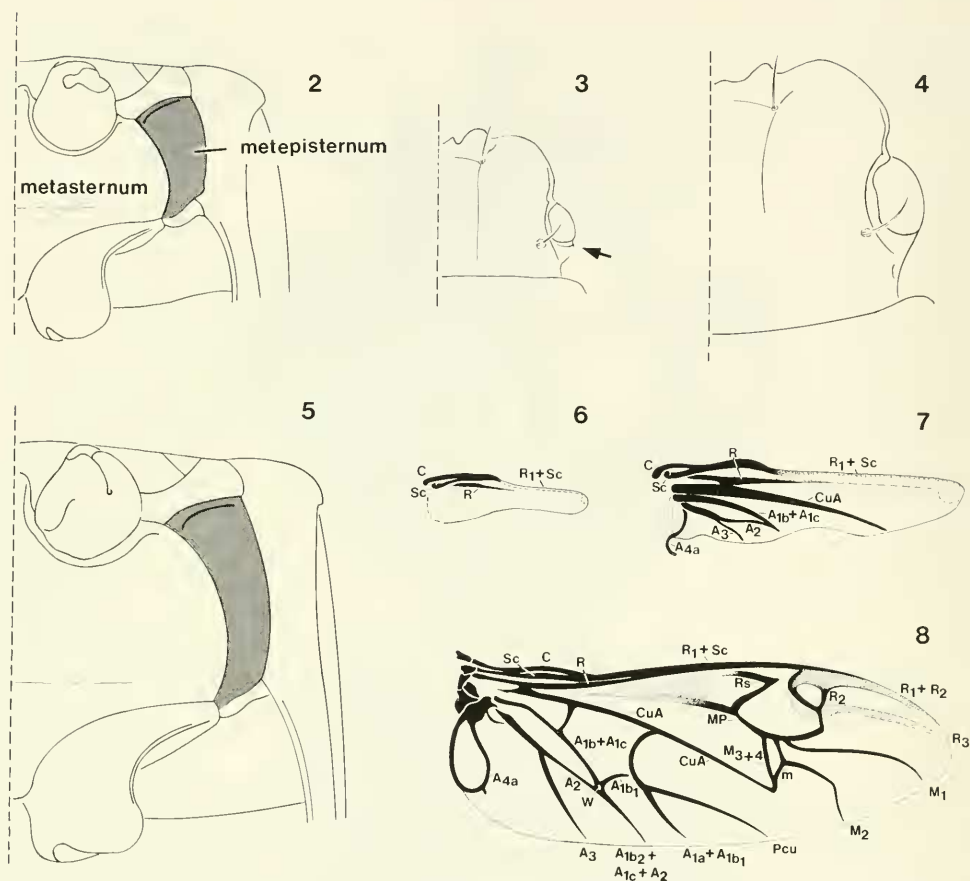


Fig. 1. Habitus, *Scarites marinus*. Mexico: Quintana Roo: Puerto Juarez.



Figs. 2–8. *Scarites* spp. 2, Pterothorax (oblique ventral view) of *S. ocalensis*. 3, Head (dorsal view) of *S. ocalensis*. 4, Head (dorsal view) of *S. subterraneus*. 5, Pterothorax (oblique ventral view) of *S. subterraneus*. 6, Metathoracic wing of *S. ocalensis*. 7, Metathoracic wing of *S. marinus*. 8, Metathoracic wing of *S. subterraneus*.

Distribution (Fig. 9).—Peninsular Florida, Bahama Islands, Cuba, and the Yucatan Peninsula. A single specimen without specific locality or date has been collected in Louisiana. See list of materials below for more exact locality information.

Ecology.—This species is apparently restricted to sea beaches, being commonly found beneath rotting seaweed. This species inhabits subtropical regions; the Cedar Keys (Levy Co., Florida) appear to have the northernmost established population. The species has been collected throughout the year. Teneral specimens were collected in January in the State of Campeche, Mexico.

Material examined.—*Holotype*: ♀, bearing the following labels: printed “FLA. Monroe Co. Big Pine Key, SE corner near US 1, 22 Dec. 1965 R. Beard”; handwritten, glued to red backing “HOLOTYPE *Scarites marinus* Nichols des. S. W. Nichols 1985.” Genitalia in glycerine-filled microvial affixed beneath final label. Holotype deposited in the Cornell University Insect Collections (CUIC). *Paratypes*

(169 individuals): FLORIDA: Dade Co.: Cutler (1, USNM), Matheson Hammock (2, CNCI). Levy Co.: Cedar Keys (3, MCZC, USNM), North Key (1, FDAG). Monroe Co.: Boca Chica nr. W. end SR 941 (1, FDAG), Cape Sable (31, FDAG, PUIC), Big Pine Key (2, FDAG, OSUC), Flamingo (1, JHFC), Key Largo (2, FDAG), Key West (1, USNM), Long Pine Key (1, MCZC), Lower Matecumbe Key (2, FDAG, MCZC), No Name Key, 7 mi. E. bridge (1, FDAG). Pinellas Co.: Dunedin (6, AMNH, PUIC, USNM), Maximo Point (3, PUIC), St. Petersburg (3, CUIC, MCZC-H. C. Fall Collection). Sarasote Co.: Sarasota (1, MCZC). BAHAMA ISLANDS: Eleuthera (1, USNM). CUBA: La Habana Prov.: Havana (1, MCZC). Pinar del Rio Prov.: Cayo Inez de Sota (1, ZMUA). YUCATÁN PENINSULA (MEXICO): Campeche: Campeche (1, MCZC), nr. Cuba (33, UASM), Zacatal (1, UASM). Quintana Roo: Cozumel Is., North Point (20, USMN), Isla Mujeres (5, USNM), Espiritu Santo Bay (1, USNM), Puerto Juarez (26, UASM). Yucatán: the state? (2, CNCI, USNM), Progreso (1, USNM). LOUISIANA: no specific locality (1, MCZC).

*Scarites ocalensis* Nichols, NEW SPECIES

Figs. 2, 3, 6, 10

**Diagnosis.**—Characteristics of *Scarites* s. str. (Bänninger, 1938: 114–116; Reichardt, 1977: 388); antennomeres 8–10 as broad as long (moniliform); postocular area projecting laterally as far as compound eye, in dorsal view; anterior lateral seta of prothorax absent; metasternum asetose; metasternum behind mesocoxa as long as or slightly shorter than length of metacoxa; elytral striae well-impressed to apex and lacking punctulae; setiferous puncture in basal half of interval 3 of elytron present or absent; micropterous; small species, left elytron 6.05–7.40 mm in length; known only from peninsular Florida.

**Description.**—Characteristics of *Scarites* s. str. (Bänninger, 1938: 114–116; Reichardt, 1977: 388); body black, antennae and palpi ferruginous, legs piceous.

**Head:** Antennae with antennomeres 8–10 as broad as long (moniliform); eyes somewhat reduced (Fig. 3), postocular area projecting laterally as far as compound eye (in dorsal view) and possessing a narrow ocular margin.

**Thorax:** Pronotum broadest before middle and lacking anterior lateral seta; metasternum asetose, behind mesocoxa as long or slightly shorter than metacoxa; metepisternum with anterior margin  $\frac{1}{2}$  or more the length of lateral margin (Fig. 2); elytral striae well-impressed to apex and lacking punctulae; elytral intervals with distinct isodiametric (hexagonal) microsculpture throughout (at  $75\times$ ); setiferous puncture in basal half of interval 3 of elytron present or absent; micropterous (Fig. 6); elytra together ovate, sides of elytra distinctly less parallel than in *S. subterraneus*.

**Abdomen:** No obvious differences in male or female genitalia from *S. subterraneus*.

**Size:** Length of left elytron: range (13 individuals), 6.05–7.40 mm (nearest .05); median, 6.80 mm (nearest .05); mean, 6.80 mm (nearest .05).

**Measurements of male holotype:** Maximum width of head before eyes, 3.32 mm (nearest .02); maximum width of head, 3.80 mm (nearest .02); maximum width of pronotum, 4.35 mm (nearest .05); width of pronotum at hind angles, 3.80 mm (nearest .05); length of pronotum at midline, 3.35 mm (nearest .05);

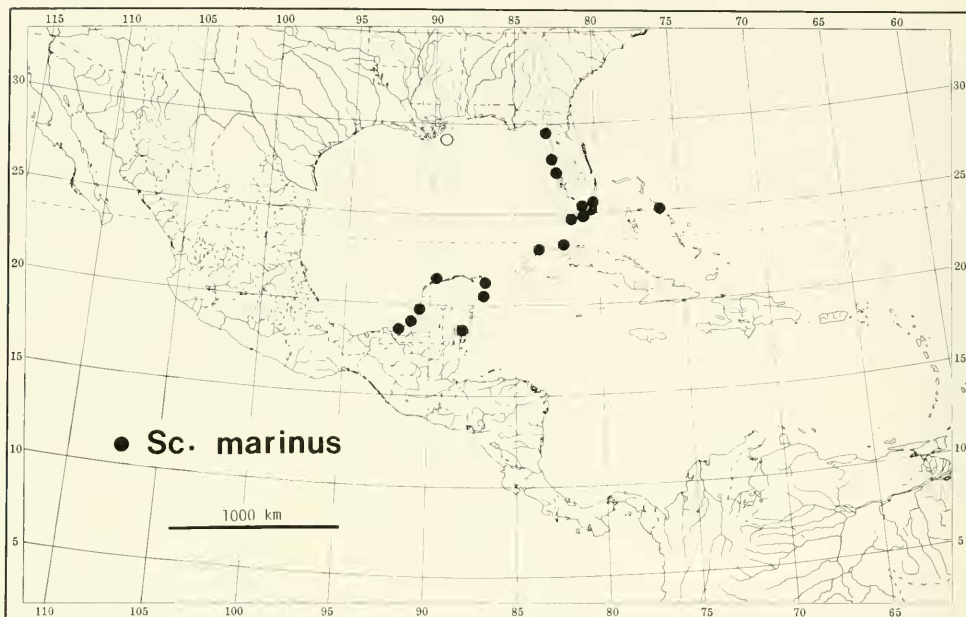


Fig. 9. Known distribution of *S. marinus* (open circle, state record for Louisiana).

maximum width of elytra, 4.25 mm (nearest .05); length of left elytron, 7.20 mm (nearest .05).

**Etymology.**—Named after the Ocala Island (i.e. highlands of peninsular Florida), a piece of land periodically isolated by eustatic fluctuations in sea level during the Pleistocene and probable area of origin of the species.

**Type locality.**—Jacksonville, Florida (Duval Co.).

**Distribution (Fig. 10).**—Known only from northern peninsular Florida north of Lake Okeechobee. See list of materials below for more exact locality information.

**Ecology.**—Collected between March 17 and June with no teneral specimens recorded. Nothing is known about this species' habitat. Judging from its flightless condition and reduced eyes *S. ocalensis* is probably not riparian, but instead probably lives in earthen tunnels in upland areas. This species inhabits the moist subtropical ("citrus growing") zone of Florida in the Holdridge system of life zones (Sawyer and Lindsey, 1964).

**Material examined.**—*Holotype*: ♂, bearing the following labels: handwritten "Jacksonville 3.May.16 Fla."; handwritten "Scarites subterraneus F. det. H. Dietrich"; male sex label; handwritten, glued to red backing "HOLOTYPE Scarites ocalensis Nichols des. S. W. Nichols 1985." Genitalia in glycerine-filled microvial affixed beneath final label. Holotype in Cornell University Insect Collections (CUIC). *Paratypes* (12 individuals), all from Florida. Alachua Co.: Gainesville (1, USNM). Duval Co.: Jacksonville (1, MCZC). Highlands Co.: Brighton (1, MCZC). Hillsborough Co.: no specific locality (1, USNM). Orange Co.: Winter Park (2, MCZC). Pinellas Co.: Gulfport (1, MCZC-H.C. Fall Collection). Seminole Co.: Sanford (3, MCZC). Volusia Co.: Enterprise (2, OSUC).

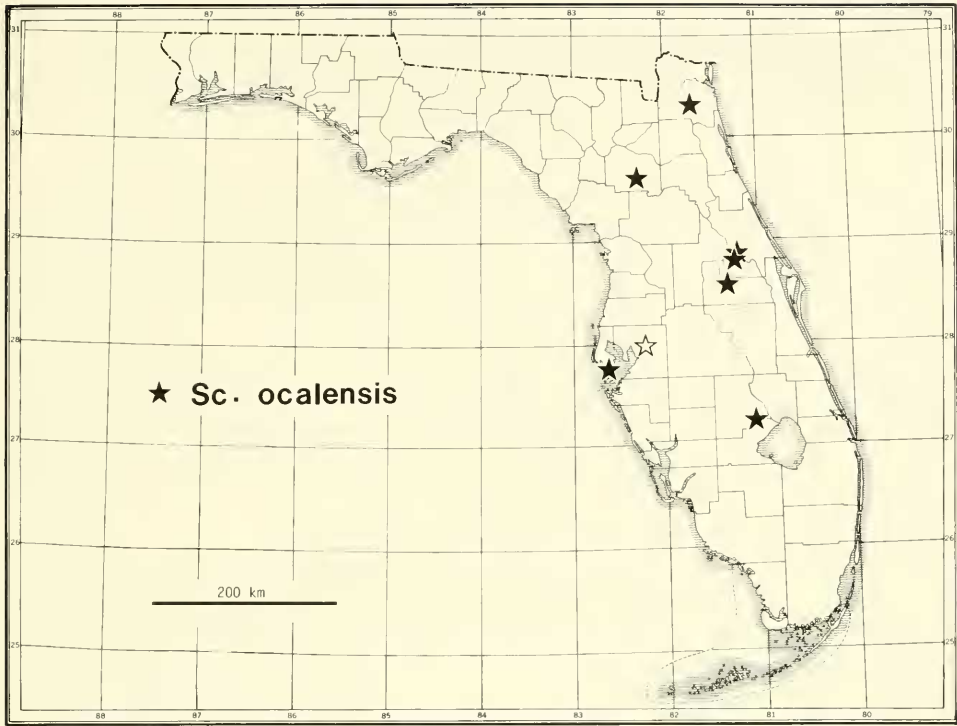


Fig. 10. Known distribution of *S. ocalensis* (open star, county record for Hillsborough Co.).

PROVISIONAL KEY TO THE NEW WORLD SPECIES OF THE  
*SCARITES SUBTERRANEUS* COMPLEX

1. Metasternum and metepisternum reduced in length (Fig. 2); micropterous (Fig. 6); compound eye somewhat reduced, leaving narrow postocular border (Fig. 3); small species, left elytron not over 7.5 mm in length; Florida ..... *ocalensis* n. sp.
- Metasternum and metepisternum not reduced in length (Fig. 5); brachypterous or fully winged (Figs. 7, 8); compound eye not reduced (Fig. 4); small to moderate sized species, hindbody generally over 7.5 mm in length; Florida and elsewhere ..... 2
2. Setiferous puncture in basal half of elytral interval 3 absent (Fig. 1); elytral striae consisting of very finely impressed lines with minute punctulae; brachypterous (Fig. 7); distributed on sea beaches of the Gulf coast and the West Indies ..... *marinus* n. sp.
- Setiferous puncture in basal half of elytral interval 3 usually present; elytral striae varying from virtually absent (some western *Sc. subterraneus*) to consisting of well-impressed grooves, but always lacking minute punctulae; fully winged (Fig. 8); not generally found on sea beaches ..... 3
3. Larger species, left elytron over 10.0 mm in length; 7th elytral interval somewhat raised just behind humerus; median pair of setiferous punctures on abdominal sternum VII (last visible abdominal sternum) shifted away from posterior margin; Cuba ..... *alterans* Chaudoir

- Smaller species, left elytron usually under 10.0 mm in length; 7th elytral interval not raised behind humerus; median pair of setiferous punctures on abdominal sternum VII not shifted away from posterior margin; Cuba and elsewhere . . . . . *subterraneus* Fabricius

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## LITERATURE CITED

- Bänninger, M. 1938. Monographie der Subtribus Scaritina (Col. Carab.) II. Dtsch. Entomol. Z. 1938: 41–181, Taf. 1–4.
- Blatchley, W. S. 1914. Notes on the winter and early spring Coleoptera of Florida, with descriptions of new species. Can. Entomol. 46: 61–66.
- . 1917. On some noteworthy Coleoptera from the west coast of Florida. Can. Entomol. 49: 137–148.
- Darlington, P. J., Jr. 1936. Variation and atrophy of flying wings of some carabid beetles. Ann. Entomol. Soc. Am. 29: 136–176, 3 pl.
- . 1953. West Indian Carabidae (Coleoptera). The Bahama species. Am. Mus. Novit. no. 1650: 1–16.
- Leng, C. W. 1915. List of the Carabidae of Florida. Bull. Am. Mus. Nat. Hist. 34: 555–601.
- Leng, C. W. and A. J. Mutchler. 1914. A preliminary list of the Coleoptera of the West Indies as recorded to January 1, 1914. Bull. Am. Mus. Nat. Hist. 33: 391–493.
- Nichols, S. W. 1985. Neotype designation for *Scarites subterraneus* Fabricius 1775 (Coleoptera: Carabidae: Scaritini). J. N.Y. Entomol. Soc. 93: 1212–1215.
- Reichardt, H. 1977. A synopsis of the genera of Neotropical Carabidae (Insecta: Coleoptera). Quaest. Entomol. 13: 346–493.
- Sawyer, J. O. and A. A. Lindsey. 1964. The Holdridge bioclimatic formations of the eastern and central United States. Proc. Indiana Acad. Sci. 73: 105–112.
- Shaeffer, C. 1913. On *Scarites subterraneus* Fabr. and varieties. Bull. Brooklyn Entomol. Soc. 8: 122–124.
- Schwarz, E. A. 1878. The Coleoptera of Florida. List of species. Proc. Amer. Phil. Soc. 17: 434–469.
- Wallace, F. L. and R. C. Fox. 1975. A comparative morphological study of the hind wing venation of the order Coleoptera, Part 1. Proc. Entomol. Soc. Wash. 77: 329–354.